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Detection of MTB resistance to rifampicin and isoniazid by nitrate reductase assay

M. Mohiedden AbdelHaleim*, N.G. E.-D. El-Rashidy, N.N. Nawar, M.I. Abd El hamid

Faculty of medicine - Cairo University - Egypt, Ciaro, Egypt

Background: MDR- TB is defined as resistance to at least INH and RMP. Current standard methods for the detection of MDR-TB including the proportional method are lengthy and laborious.Commercial methods, such as (MGIT) and molecular methods, are expensive and could not be easily implemented in developing countries. Evaluation of NRA method as a rapid and inexpensive method in comparison to proportion method may be useful clinically.

Methods & Materials: Seventy five patients admitted to Chest Hospital from June 2011 – March 2012 and diagnosed clinically and radiologically as pulmonary TB. All cases were subjected to full history taking and morning sputum sample collection, which were examined microscopically for direct Z.N stained smears before and after decontamination for the detection of AFB, culture of the processed samples on the egg based L-J media and Indirect DST for RMP and INH comparing the NRA and The Proportion Method

Results: Microscopic examination of direct smears stained by Z.N, before decontamination showed that, there were 4%negative, 17.3%; < 9 bacilli/ 100 HPF, 46.7%; +, 25.3%; ++ and 6.7%:+++. After decontamination, there were 4% negative and 96% positive samples. The mean time required to obtain the results by NRA was 9.8 days compared to 4–6 weeks for the proportion method. There is a significant correlation between both the INH and RMP sensitivity results by the NRA method and the proportion method, with a P value < 0.05. The sensitivity and the specificity of the NRA method were 100% and 98% for isoniazid and 100% and 94% for rifampicin, respectively. The diagnostic accuracy of the NRA for detection of resistance to RMP and INH was 96% and 98% respectively. There is a significant correlation between the INH and RMP sensitivity results by both the proportion method and NRA and the history of receiving anti-tuberculous drugs as the history of receiving anti-tuberculous drugs increased the prevalence of INH and RMP resistance, with a P value < 0.05

Conclusion: This study proves that the NRA is simple, cost effective test of high accuracy and could be an alternative to conventional methods in the diagnosis and susceptibility testing of RMPand INH resistant MTB.

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Search for alternatives of indoor residual spraying to control visceral leishmaniasis

M.L. Das*

B.P.Koirala Institute of Health Sciences, Dharan, Nepal

Background: Visceral leishmaniasis (VL) is a neglected tropical disease transmitted by sand flies. In 2005India,BangladeshandNepalagreed to reduce the annual VL incidence to 1/ 10,000. Toward this set target, vector control will play a significant role. It is essential to identify some sustainable alternative that should be bio effective. The study was conducted with the objective to compare the effectiveness of three different types of alternatives of IRS.

Methods & Materials: Four high VL endemic villages from Sunsari and Morang districts were divided into 24 clusters of 50HH each. On the basis of sand fly density of baseline survey clusters were matched, stratified and randomised.

Sand flies were collected by CDC light traps from five randomly selected HH of each cluster–one, three, six, nine and twelve months after intervention for two consecutive nights to determine efficacy of intervention from April 2012 to June 2013.

Indoor Durable Wall Lining (IDWL), containing deltamethrin; Indoor Wall and Floor Plastering with Lime (IWFPL) and Existing bed-nets impregnated with deltamethrin (ITN) were used as interventions. House holds of control area were provided with one ITN after completion of the study.

Independent sample chi square between treatment and control; Odds ratio was done between IDWL and ITN using Epi Info7.

Results: Altogether 240 LT nights were used in each survey. In the survey one month after intervention reduction of total number of sand fly was highly significant be IDWL and ITN, but reduction of P argentipes was highly significant by IDWL but not significant by ITN and IWFPL. In the surveys 3 months, 9 months and 12 months after intervention reduction of total sand fly and *P. argentipes* by IDWL & ITN were highly significant in comparison to Control but not significant by IWFPL. But six months after intervention there was no significant reduction due to winter season. In odd's ratio it was found that ITNs were able to reduce the sand fly number 2.55 times more than IDWL, one year after intervention.

Conclusion: Decrease in the number of sand fly and *P. argentipes* were highly significant by IDWL and ITN both. But ITNs are more effective.

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